

APPENDIX C
AIRSPACE MANAGEMENT AND USE

Acronyms and Abbreviations

18 AGRS	18th Aggressor Squadron
AGL	Above Ground Level
ARTCC	Air Route Traffic Control Center
ATC	Air Traffic Control
ATCAA	Air Traffic Control Assigned Airspace
CFA	Controlled Firing Areas
FAA	Federal Aviation Administration
FL	Flight Level
IFR	Instrument Flight Rule
JBER	Joint Base Elmendorf-Richardson (combination of Elmendorf AFB and Fort Richardson)
KIAS	Knots Indicated Airspeed
LATN	Low Altitude Tactical Navigation
MACA	Midair Collision Avoidance
MOA	Military Operation Area
MSL	Mean Sea Level
MTR	Military Training Route
NM	nautical mile
SUA	Special Use Airspace
U.S.	United States
VFR	Visual Flight Rule

TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
APPENDIX C AIRSPACE MANAGEMENT AND USE.....	C-1
C.1 National Airspace System Description	C-1
C.2 Airspace Definitions	C-1
C.2.1 Midair Collision Avoidance (MACA) Pamphlet for JBER	C-4
C.3 References	C-26

LIST OF FIGURES

<u>SECTION</u>	<u>PAGE</u>
Figure C.1-1. Airspace Designations.....	C-1

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C.1 National Airspace System Description

The nation's airspace is designed and managed by the Federal Aviation Administration (FAA) in a manner that strives to meet both the individual and common needs of all military, commercial, and general aviation interests. In general, all navigable airspace is categorized as either regulatory or non-regulatory. Within those two categories are four types of airspace: Controlled, Special Use, Uncontrolled, and Other. Airspace is further defined in terms of classifications according to the operating and flight rules that apply to each airspace area. The manner in which airspace is classified is dependent on (1) the complexity or density of aircraft operations within an airspace area; (2) the nature of those operations; (3) the level of safety required; and (4) national and public interest. Airspace management discussions reference these types/classifications, where appropriate, as they relate to the proposed relocation of the 18th Aggressor Squadron (18 AGRS) to Joint Base Elmendorf-Richardson (JBER) (USDOT 2013).

Controlled airspace is airspace of defined dimensions within which Air Traffic Control (ATC) services are provided to Instrument Flight Rule (IFR) and Visual Flight Rule (VFR) flights in accordance with the airspace classification (USDOT 2013). Controlled airspace is categorized into five separate classes: Classes A through E. These classes identify airspace that is controlled, airspace supporting airport operations, and designated airways affording en route transit from place-to-place. The classes also dictate pilot qualification requirements, rules of flight that must be followed, and the type of equipment necessary to operate within that airspace class. Military aircrews fly under FAA rules when not training in SUA. Uncontrolled airspace (designated as Class G airspace) has no specific prohibitions associated with its use. Figure C.1-1 illustrates the different types of airspace designations.

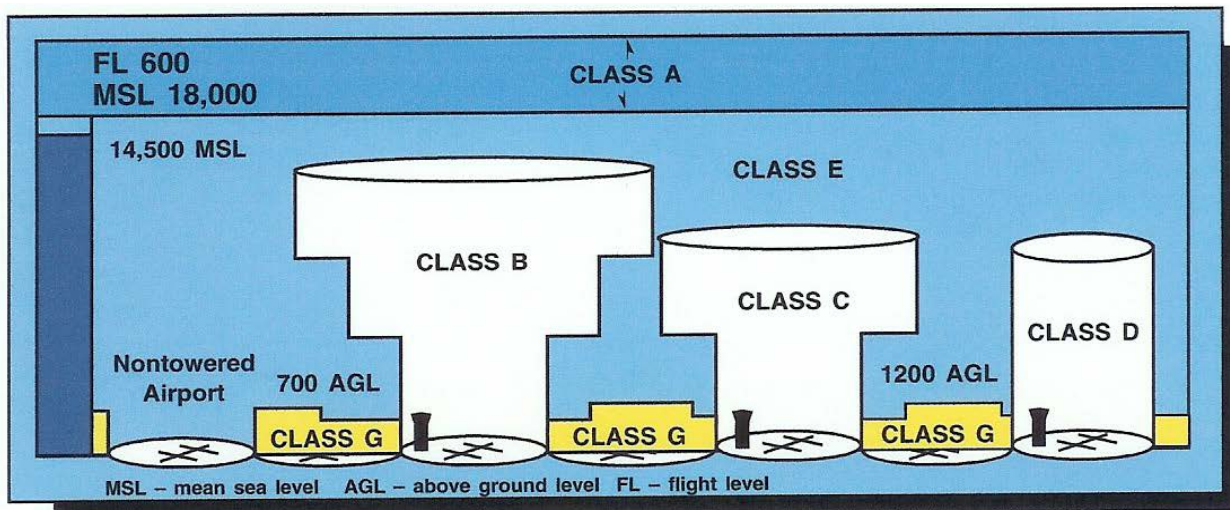


Figure C.1-1. Airspace Designations

C.2 Airspace Definitions

Class A airspace, generally, is that airspace from 18,000 feet MSL up to, and including, Flight Level (FL) 600. Unless otherwise authorized, all aircraft must operate under IFR within Class A airspace.

Class B airspace, generally, is that airspace from the surface to 10,000 feet MSL around the nation's busiest airports. The actual configuration of Class B airspace is individually tailored and consists of a surface area and two or more layers, and is designed to contain all published instrument procedures (USDOT 2013).

Class C is generally that airspace from the surface to 4,000 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower, are serviced by a radar approach control, and that have a certain number of IFR operations or passenger enplanements. Although the actual configuration of Class C airspace is individually tailored, it usually consists of a surface area with a 5 nautical mile (NM) radius, and an outer circle with a 10 NM radius that extends from 1,200 feet to 4,000 feet above the airport elevation (USDOT 2013).

Class D airspace, generally, is that airspace from the surface to 2,500 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower. The configuration of each Class D airspace area is individually tailored and when instrument procedures are published, the airspace will normally be designed to contain the procedures. Arrival extensions for instrument approach procedures may be designated as Class D or Class E airspace (USDOT 2013).

Class E airspace is controlled airspace that is not Class A, B, C, or D. The floor of Class E airspace is generally 700 feet Above Ground Level (AGL). There are areas where Class E airspace begins at either the surface or 700 feet AGL that are used to transition to/from the terminal or en route environment (around non-towered airports). These areas are designated by VFR sectional charts. In most areas of the United States (U.S.), Class E airspace extends from 1,200 feet AGL up to, but not including, 18,000 feet MSL, the lower limit of Class A airspace. No ATC clearance or radio communication is required for VFR flight in Class E airspace. VFR visibility requirements below 10,000 feet MSL are 3 statute miles visibility and cloud clearance of 500 feet below, 1,000 feet above, and 2,000 horizontal. Above 10,000 feet MSL the requirement is 5 statute miles visibility, and cloud clearance of 1,000 feet below, 1,000 feet above, and 1 mile laterally (USDOT 2013). There are seven types of Class E airspace:

Surface Area Designated for an Airport - When so designated, this type of Class E airspace will be configured to contain all instrument procedures.

Extension to a Surface Area - Class E airspace areas that serve as extensions to Class B, C, and D surface areas designated for an airport. This airspace provides controlled airspace to contain standard instrument approach procedures without imposing a communications requirement on pilots operating under VFR.

Airspace Used for Transition - Class E airspace areas beginning at either 700 or 1,200 feet AGL used to transition to/from the terminal or en route environment.

En Route Domestic Airspace Areas - Class E airspace areas that extend upward from a specified altitude to provide controlled airspace where there is a requirement for IFR en route air traffic control services, but where the Federal Airway system is inadequate.

Federal Airways (Victor Airways) - Class E airspace areas, and, unless otherwise specified, extend upward from 1,200 feet to, but not including, 18,000 feet MSL.

Other - Unless designated at a lower altitude, Class E airspace begins at 14,500 feet MSL up to, but not including, 18,000 feet MSL overlying the following:

- a) The 48 contiguous states, including the waters within 12 miles from the coast of the 48 contiguous states;
- b) The District of Columbia;
- c) Alaska, including the waters within 12 miles from the coast of Alaska and that airspace above FL600;

- d) d) Excluding the Alaska peninsula west of 160°00'00" west longitude, and the airspace below 1,500 feet above the surface of the earth unless specifically so designated.

Offshore/Control Airspace Areas - This includes airspace areas beyond 12 NM from the coast of the U.S., wherein air traffic control services are provided (USDOT 2013).

Airspace that has not been designated as Class A, B, C, D, or E airspace is Uncontrolled Airspace (Class G). Class "G" airspace generally underlies Class E airspace with vertical limits up to 700 feet AGL, 1,200 feet AGL, or 14,500 feet AGL, whichever applies. Cloud clearance and visibility requirements differ by altitude and day versus night.

FAA has charted and published Special Use Airspace (SUA) for military and other governmental activities. SUA is designated airspace within which flight activities require confinement of participating aircraft or place operating limitations on non-participating aircraft. Military Operation Areas (MOA), Restricted Areas, Controlled Firing Areas, and Warning Areas are examples of SUA. Other airspace consists of advisory areas, areas that have specific flight limitations or designated prohibitions, areas designated for parachute jump operations, Military Training Routes (MTRs), Low Altitude Tactical Navigation (LATN) areas and Aerial Refueling Tracks. This category also includes Air Traffic Control Assigned Airspace (ATCAA).

Management of SUA considers how airspace is designated, used, and administered to best accommodate the individual and common needs of commercial aviation, general aviation, the military, resource management agencies, and others. The FAA considers multiple and sometimes competing demands for aviation airspace in relation to airport operations, Federal Airways, Jet Routes, military flight training activities, and other special needs to determine how the National Airspace System can best be structured to accommodate all user requirements. Airspace currently used for military training activities in Alaska includes the types of airspace defined below:

Military Operation Area (MOA) - MOAs are established to separate or segregate certain non-hazardous military activities from IFR aircraft traffic and to identify VFR aircraft traffic where these military activities are conducted. A MOA is SUA of defined vertical and lateral limits established outside Class A airspace to separate and segregate certain non-hazardous military activities from IFR traffic and to identify for VFR traffic where these activities are conducted (USDOT 2013). MOAs are considered "joint use" airspace whereas non-participating aircraft operating under VFR are permitted to enter a MOA, even when the MOA is active for military use. Aircraft operating under IFR must remain clear of an active MOA unless approved by the responsible ATC. If an IFR aircraft is approved to transit a MOA that part of the MOA, it is effectively made not active for military training during the IFR aircraft transit.

Air Traffic Controlled Assigned Airspace (ATCAA) - Airspace of defined vertical and lateral limits, assigned by Air Traffic Control to provide air traffic segregation between the specified activities being conducted within the assigned airspace and other IFR air traffic (USDOT 2013). When not required for other needs, an ATCAA is airspace authorized for military use by the managing Air Route Traffic Control Center (ARTCC). ATCAAs are in Class A airspace and are frequently structured and used to extend the horizontal and/or vertical boundaries of MOAs. ATCAAs can extend from Flight Level (FL) 180 to FL600 or higher.

Restricted Area – A restricted area is designated airspace that supports ground or flight activities that could be hazardous to non-participating aircraft. A Restricted Area is airspace designated under 14 Code of Federal Regulations (CFR) Part 73, within which the flight of aircraft is subject to restriction. Most restricted areas are designated "joint-use" and IFR/VFR operations in the area may

be authorized by the controlling ATC facility when it is not being utilized by the using agency (USDOT 2013).

Military Training Routes (MTRs) - MTRs are flight corridors developed and used by the DoD to practice high-speed, low-altitude flight, generally below 10,000 feet MSL. Specifically, MTRs are airspace of defined vertical and lateral dimensions established for the conduct of military flight training at airspeeds in excess of 250 Knots Indicated Airspeed (KIAS).

Warning Areas – Warning areas is airspace of defined dimensions, extending from 3 NM outward from the coast of the U.S. that contains activity that may be hazardous to nonparticipating aircraft. The purpose of such warning areas is to warn non-participating pilots of the potential danger. A warning area may be located over domestic or international waters or both.

Controlled Firing Areas (CFAs) - A CFA is established to contain activities, which if not conducted in a controlled environment, would be hazardous to nonparticipating aircraft.

Low Altitude Tactical Navigation (LATN) Areas - Airspace outside a MOA used by aircraft such as the A-10 and C-130 for low altitude training that can safely operate at speeds of 250-knots/287 mph, or less. At these speeds, these aircraft are capable of safely merging with general aviation traffic. Military aircraft engaged in this type of exercise, like all other aircraft, are required to comply with federal aviation regulations to see and avoid other aircraft and obstacles. FAA and Air Force regulations also require aircraft utilizing the LATN area to avoid airfields, towns, noise sensitive areas, and wilderness areas by prescribed vertical and/or horizontal distances

C.2.1 Midair Collision Avoidance (MACA) Pamphlet for JBER

The following is the JBER MACA pamphlet that provides meaningful information on how and where routine aircraft operations are conducted at JBER with the objective of increasing flight safety for all concerned in the JBER/Anchorage airspace environment.

Midair Collision Avoidance (MACA) Pamphlet for Joint Base Elmendorf-Richardson (JBER)



APRIL 2011



DEPARTMENT OF THE AIR FORCE
PACIFIC AIR FORCES
JOINT BASE ELMENDORF-RICHARDSON, ALASKA

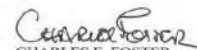
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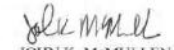
MEMORANDUM FOR ALL AVIATORS

FROM: Joint Base Elmendorf-Richardson

SUBJECT: Midair Collision Avoidance

1. As more and more civilian and military aircraft take to the skies around Alaska, midair collision avoidance (MACA) becomes increasingly complicated. At Joint Base Elmendorf-Richardson a coordinated effort by all of our units, to include the Alaska Air National Guard and Army Guard, is required to maintain vigilance and ensure safety in the air. Our goal is to make our MACA program details known to all aviators with the expectation that understanding when and where typical military traffic operates will increase our margin of safety and minimize the chance of a midair mishap.
2. The attached pamphlet includes information on routine aircraft operations flown at Joint Base Elmendorf-Richardson. Though not all-inclusive, it provides guidance on locations of military aircraft entering and departing Elmendorf airspace. Please refer to this pamphlet while operating near the JBER area. The Air Force is a 24-hour/7-day a week operation and pilots must always be alert for possible traffic conflicts and related hazards such as wake turbulence.
3. Close cooperation and effective communication with the local general aviation community on the unique challenges of flying in the vicinity of Elmendorf airspace has resulted in an outstanding aviation safety record. Let's keep this streak going. Please call the 3rd Wing (Active Duty) Flight Safety offices at (907) 552-4681 and/or the 176th Wing (Air National Guard) Safety offices at (907) 551-0248/0263 with any questions or suggestions about local flying. For statewide Air Force flying information, refer to the "Alaska Airspace Info" link at www.jber.af.mil, or call the 611th Air Operations Squadron at (907) 552-5103.


CHARLES E. FOSTER
Brigadier General, AKANG
Commander, 176 WG


JOHN K. McMULLEN
Colonel, USAF
Commander, 3 WG

Attachment:
MACA Pamphlet

<u>Topic</u>	<u>Page</u>
Elmendorf Airfield Aircraft	2
Anchorage Terminal Airspace	11
Part 93 (JBER Final Approach Corridor)	12
Restricted Area R-2203	13
Elmendorf Airfield Airspace	14
Elmendorf Airfield Instrument Departures and Arrivals	15
Elmendorf Airfield Pattern Overview	16
Arrivals Into Elmendorf Airfield	17
Elmendorf Airfield Runway 16 and 34 Operations	20
Aero Club	21
Six Mile Lake	22
Anchorage Bowl VFR Traffic	23
RED FLAG - Alaska Exercises	24
Training Areas and Low Levels Routes	25
Military Operating Areas	26
Lights-Out Operations	27
Your Role in Collision Avoidance	28
Traffic Collision Avoidance System (TCAS)	30
Vision in Flight	31
Radar Advisory Service	35
Hazardous Air Traffic Reports (HATR)	35
Aviation Safety Reporting System (ASRS)	37
Additional Information	39

Considerations with this years MACA Pamphlet

- The use of the official base name, Joint Base Elmendorf Fort Richardson (JBER), is not being used in this pamphlet to avoid conflicts with already existing publications that identify "Elmendorf AFB" or "Elmendorf Air Field" with specific instructions on the safety of flight.
- F-15 aircraft information has been removed from this pamphlet.
- C-130's and the HH-60 Pavehawk helicopter are now assigned to Elmendorf AFB.

Elmendorf Airfield Aircraft

F-22A RAPTOR - The F-22A Raptor is the Air Force's newest fighter aircraft. Its combination of stealth, supercruise, maneuverability, and integrated avionics, coupled with improved supportability, represents an exponential leap in warfighting capabilities. The Raptor performs both air-to-air and air-to-ground missions. F-22As are equipped with both UHF and VHF radios. In training areas, expect them at all altitudes and airspeeds. In the traffic pattern, they maintain 150-350 knots.



APPROACH SPEEDS	150 - 170 KIAS
CRUISING SPEEDS	300 - 550 TAS
CEILING	60,000 FT

F-22 Avoidance

• F-22 Training Areas:

- R-2202, R-2205, R-2211, Stony, Susitna, Galena, Yukon, Fox, Eielson, Birch, Buffalo, Viper, Naknek MOA's
- Low Level Military Training Routes (MTRs) primarily used are VR1900, VR937, VR1905, IR900 and IR919.

• F-22 Avoidance Information:

- Summer fighter operations are primarily during daylight hours, Monday through Friday. In the winter months, flying operations outside the MOAs may occur late into the night.
- In training areas, expect them at all altitudes and airspeeds.
- While in training areas, fighters monitor UHF Guard and are not normally on a frequency with Anchorage Center.
- On low level routes, expect to see the fighters at 500' AGL flying about 510 knots. When flying in the vicinity of an MTR, you must ask FSS for MTR activity. MTRs are not listed in the NOTAMs.
- Fighters on low level routes monitor Flight Service Station (FSS) frequencies (255.4 UHF) and UHF Guard.
- Fighters primarily fly in formations of two to four aircraft. If you see one, look for more, 500' to 3NM either abreast or in-trail.

Elmendorf Airfield Aircraft (Con't)

C-130H/HC-130N HERCULES The C-130 performs airdrop and airland resupply while the HC-130N performs in-flight helicopter refueling, search and rescue and airdrop missions. C/HC-130s are equipped with UHF and VHF radios and all are equipped with TCAS. They can be difficult to see because of their gray camouflage paint scheme. In the pattern they fly at 150-200 knots.



APPROACH SPEEDS	120 - 145 KIAS
CRUISING SPEEDS	260 - 300 KTAS
CEILING	35,000 FT

Elmendorf Airfield Aircraft (Con't)

C-17 GLOBEMASTER III - The C-17 is the newest, most flexible cargo aircraft to enter the airlift force, performing airdrop and air-land resupply. Elmendorf has received a full squadron of C-17s. They are equipped with UHF and VHF radios as well as TCAS. They are often hard to see because of their gray camouflage paint scheme. In the pattern they fly at 150-250 knots.



APPROACH SPEEDS	110 - 160 KIAS
CRUISING SPEEDS	400 - 450 KTAS
CEILING	41,000 FT

C/HC-130/C-17 Avoidance

• Training Areas:

- C-130s and C-17s fly in the Mat-Su Valley and surrounding areas as low as 300' AGL and up to 6,000' MSL between 130-300 Knots.

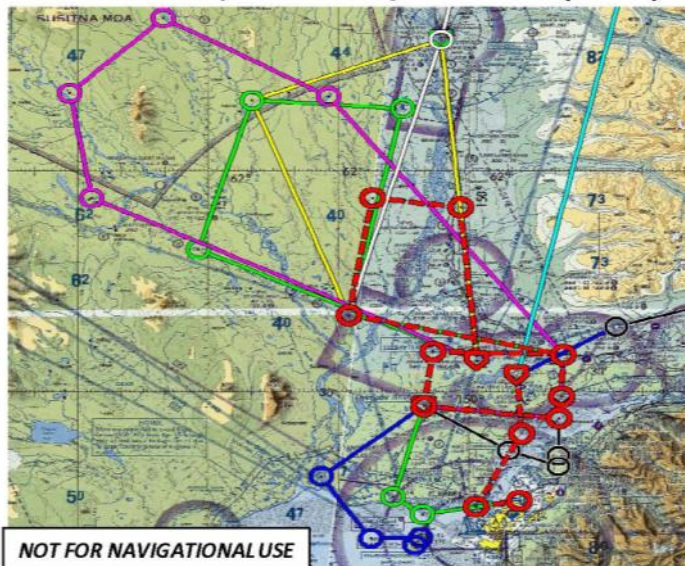
• Avoidance Information:

- Alaska C-130s and C-17s are equipped with TCAS. **Using your transponder (if equipped) will help them avoid you.**
- They operate VFR and IFR in the Mat-Su Valley primarily during daylight hours, Monday through Friday. During winter months, both C-130s and C-17s operate late into the night.
- Often fly in formations of two to six aircraft at co-altitudes. If you see one, look for more 2,000' to 4,000' in-trail.
- After a flight through the Mat-Su Valley, C-130s/C-17s commonly will use R-2203 as a drop zone.
- When R-2203 is used, they enter from the north or west and may be performing an airdrop as high as 18,000 feet MSL.
- Typical recovery from R-2203 includes a turn-out to the west and climb to 2,000' MSL.
- Crews usually monitor ATC during IFR and Common Traffic Advisory Frequency (CTAF), during VFR low level, using their VHF radio.
- **NOTE:** See pg 13 for more R2203 information

C-17 Operations in the Matanuska Valley

- **Cruise Speeds:** 200-250 KIAS
- **Low Level Altitude:** 300' – 2000' AGL
- **Flight Times:** normally 1000-0100
- **NVG Operations:** Navigation and Anti-Collision lights on, White lights pointed to sides
- **Ops vicinity Wasilla/Big Lake:** Usually 1500' -2000' MSL
- **Ops into R2203:** Usually 500' – 2000' AGL from North Shore Knik Arm to R2203 (see pg 13 for more R2203 info)
- **Radios/Transponder:** Mode 3C, S (TCAS), VHF (ATC), UHF (R2203)

General C-17/C-130 Valley Low Levels (South)



7

Elmendorf Airfield Aircraft (Con't)

BOEING E-3B SENTRY (AWACS) - The E-3 is an airborne warning and control system (AWACS) aircraft providing command and control, and capable of all-weather long range surveillance. E-3s are equipped with UHF and VHF radios, and TCAS. In the local pattern their radar is not operating and therefore they are using basic see and avoid techniques for traffic separation. They are usually seen flying in the Elmendorf traffic pattern or holding over Goose Bay, and are very visible due to their white paint scheme and large radome attached to fuselage. In the pattern they fly at 150-225 knots.



APPROACH SPEEDS	130 - 180 KIAS
CRUISING SPEEDS	380 - 450 TAS
CEILING	45,000 FT

8

Elmendorf Airfield Aircraft (Con't)

C-12 F - The C-12 is the military version of the Beechcraft Super King Air 200 and 1900C. It performs airlift support for DV's and long range radar sites. C-12's are equipped with UHF and VHF radios as well as TCAS. The C-12 is difficult to see due to its small size. It flies at 270 KTAS at altitude, and 130-180 knots in the pattern.



UC-35A - The UC-35 is the military version of a Cessna Citation 560 Ultra V twin engine aircraft. It is a medium range executive and priority cargo jet aircraft, providing airlift throughout the state. The UC-35 is equipped with UHF and VHF radios as well as TCAS. It flies at 415 KTAS at altitude, and 140-180 knots in the pattern.

HH-60G PAVEHAWK - The HH-60G is the USAF's primary combat rescue helicopter. It performs a 24-hour alert search and rescue mission and flies at very low altitudes from the surface to 1,000 AGL between 120 and 150 knots.



9

Elmendorf Airfield Aircraft (Con't)

VISITING AIRCRAFT TO ELMENDORF AIRFIELD - Elmendorf Airfield serves as a major refueling stop for large USAF cargo aircraft. The most common transient aircraft are the C-5, KC-135, and KC-10. They are most often seen on final approach and departure to/from Runway 06, at airspeeds from 150 to 250 knots.

C-5



KC-135



KC-10



F-16



F-15



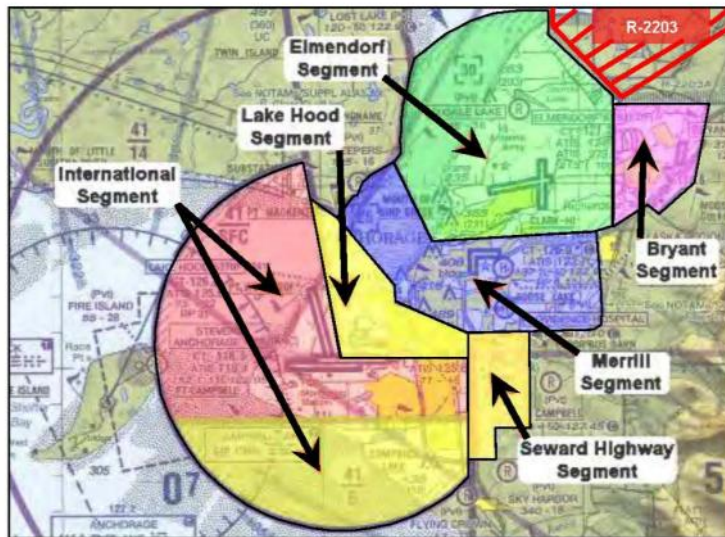
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Anchorage Terminal Area

The Anchorage Terminal Area is subdivided as follows:

- (a) International segment
- (b) Merrill segment
- (c) Lake Hood segment
- (d) Elmendorf segment
- (e) Bryant segment
- (f) Seward Highway segment

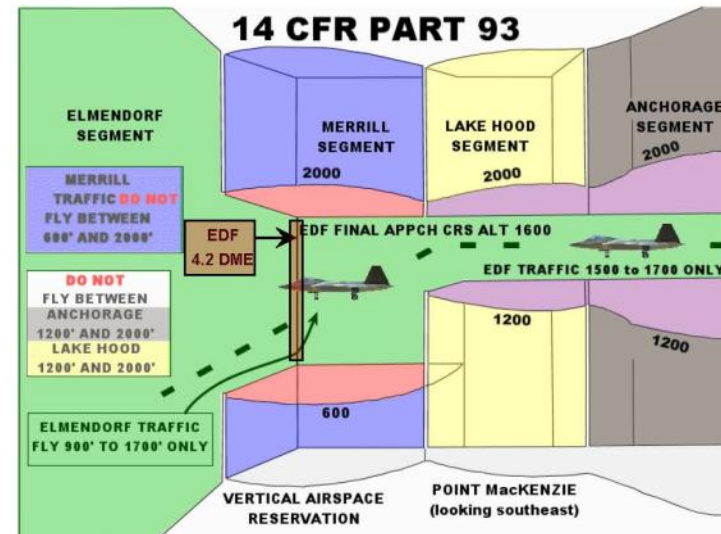
Full description of the Anchorage terminal area available at:
http://www.faa.gov/about/office_org/headquarters_offices/ato/trac
[on/anchorage/pilots_info/locproc/vtp/](http://www.faa.gov/about/office_org/headquarters_offices/ato/trac/on/anchorage/pilots_info/locproc/vtp/)



PART 93 Airspace

All aircraft operating in the Anchorage terminal area are required to adhere to 14CFR93 restrictions. VFR procedures have been established for each field, and must be reviewed prior to operation. These procedures are now available in the NOTICES section of the Alaska Supplement.

14CFR93 also establishes a "vertical airspace reservation" over Knik Arm. The graphic simulates cockpit perspective from Point Mackenzie looking SE



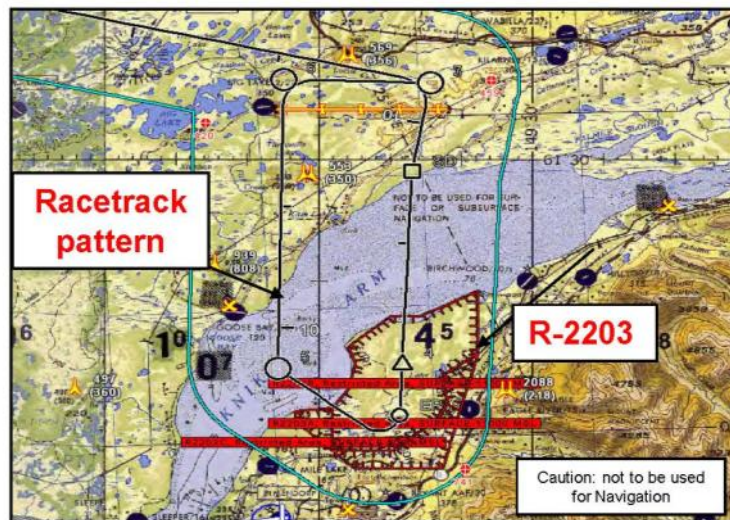
NOTE: EDF traffic and Merrill/Lake Hood traffic are separated by only 300'. Wake turbulence from heavy aircraft has been experienced and a collision potential exists between VFR traffic and final approach corridor traffic. It is vital that EDF traffic maintain assigned altitude of 1600 +/- 100', and that civil traffic maintain appropriate altitudes.

Restricted Area R-2203

R-2203 is a three-part restricted area established on the Fort Richardson complex. It's used for weapons and artillery training. The Malemute drop and landing zones is used for pattern and landing work, and C-130, C-17 and HH-60 personnel and equipment airdrops.

Run-ins to the Drop Zone are normally flown from the north, starting west of the New Wasilla airport southbound into R-2203. Occasionally, a westerly run-in into R2203 is flown. Aircraft operating on the Landing Zone and Drop Zones within R-2203 will normally exit the area to the west toward Goose Bay, setting up for landings at Elmendorf Airfield or Anchorage International. C-17s may spend an hour or more conducting multiple drops via oval "racetrack" patterns.

R-2203 is a very active military training area, with actual drops of equipment and personnel and live artillery firing. Do not overfly when status is "HOT". Status can be obtained from Elmendorf Tower (127.2), ATIS (124.3), or Anchorage Approach (118.6/119.1).



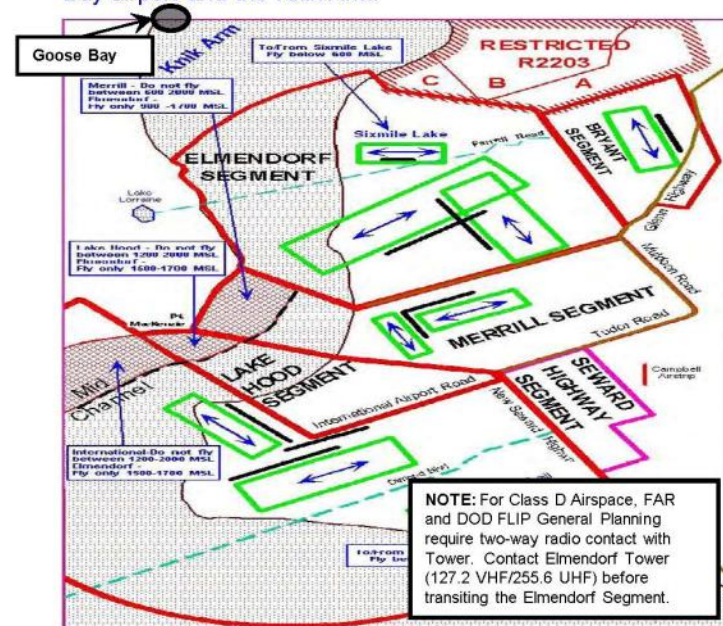
13

Elmendorf Airfield Airspace

Elmendorf Airspace is Class D airspace, surface to 3,000' MSL. It is extremely busy with local and transient aircraft. The primary runway is usually Runway 06 with aircraft using all runways for training.

Visual Pattern: The visual pattern is busy with multiple aircraft from sunrise to early evening hours, Monday through Friday. Primary pattern altitudes are 1,200' MSL and 1,700' MSL (800' MSL for light planes and helicopters), but local aircraft can be anywhere from surface to 4,500' MSL.

Goose Bay is used by Elmendorf aircraft for VFR holding and traffic sequencing. C-130s and E-3s may be seen holding between 1,500' MSL and 2,500' MSL over Goose Bay airport and the Knik Arm.



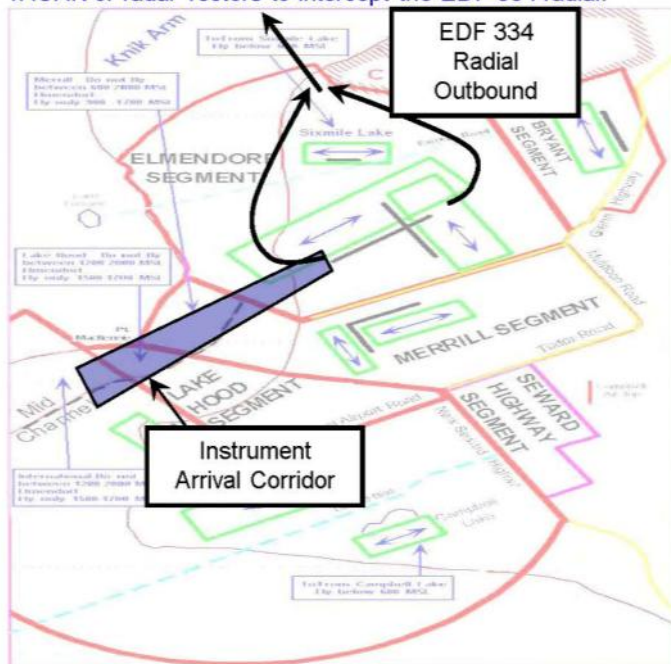
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Instrument Departures and Arrivals

Typical Elmendorf Departures:

Runway 06: Fly heading 290 to intercept the EDF 334 radial outbound.

Runway 24: Fly heading 340, turn within 4 DME of the EDF TACAN or radar vectors to intercept the EDF 334 radial.



Typical Elmendorf Arrival: Instrument Landing System (ILS) to Runway 06, circle north of Runway 06 to Runway 24 or circle east of Runway 06 to Runway 34.

Elmendorf Final Approach: The FAF is located 1 NM southeast of Pt MacKenzie inside the Lake Hood Segment.

15

Elmendorf Airfield Pattern Overview



Pattern Alts: Overhead – 1700'; Downwind (Fighter) – 1700'; Downwind (Cargo A/C) – 1200'; Downwind (Helo) – at or below 800'. All altitudes in the diagram are MSL.

Cartee Airspace: Airspace within the Merrill Class D Surface Area released to EDF for extended Rwy 16/34 operations. The Cartee airspace begins at the surface and extends to 2,500' MSL. An aircraft remaining North of the Southern edge of the Cartee baseball fields and flying no further East than Conifer Park and the bend in the Glenn Highway will remain inside of the Cartee Airspace.

Restrictions: Don't fly South of the Glenn Hwy w/o Merrill/Cartee Airspace Extension. Don't overfly the hospital.

Protection of Overhead: To provide separation from the overhead pattern during VMC, pilots executing other than full stop landings on Rwy 06/24 and Rwy 16/34 will remain at or below 1,200 feet MSL until the departure end of the runway, unless the tower approves a deviation. VFR aircraft executing other than a full stop landing on Rwy 16/34 may be instructed to remain at or below 700 feet MSL until passing the departure end of the runway to avoid crossing traffic.

16

Helicopter Departure and Arrival



VFR: 210th RQS Helicopter operations in and out of the Jolly Pad at Hangar 11 will remain at or below 600' MSL. Departures and arrivals will proceed via Hillberg and then North or East along a Cujac/Six-Mile transition. West departures will be via Pt. No-Name, avoiding the Antenna Farm. South departures will be via a Six-Mile or Hospital transition.

Arrivals via an Instrument approach may sidestep when VMC to a Hillberg arrival avoiding over flight of the North side of the base. Low approaches may extend to the runway intersection, and then hook north for a normal arrival into the Jolly Pad. (Dashed line in figure above).

IFR: To minimize FOD hazard, air taxi operations will be preferred for arrival and departure between the Jolly Pad and the active IFR runway unless visibility conditions require hover or ground taxi.

17

VFR Arrivals into Elmendorf AFB (C-130/C-17)

Cujac Transition: Flown from CUJAC to BLINK. Aircraft will cross BLINK at 3500'MSL. Aircraft will request overhead Rwy 06, or to enter downwind patterns for Rwy 16/24/34 with tower.

Kulis Transition: Flow from CUJAC to KULIS at 2000' MSL. Proceed VFR direct KULIS. Thence: Straight In: Once passing KULIS, descend as necessary to 1200'MSL and proceed direct Rwy 16 for the straight-in approach.

Shallow Abeam: The Shallow maneuver will be flown at or above 500 feet AGL. Over-fly KULIS, descend to no lower than 500' AGL and proceed inbound to the Runway 06/24 & 16/34 intersection for a left/right turn to Runway 16/06/34.

NOTE: When below 800 feet MSL, aircraft inbound for these approaches will normally broadcast position and intentions on Six Mile Lake CTAF 122.8

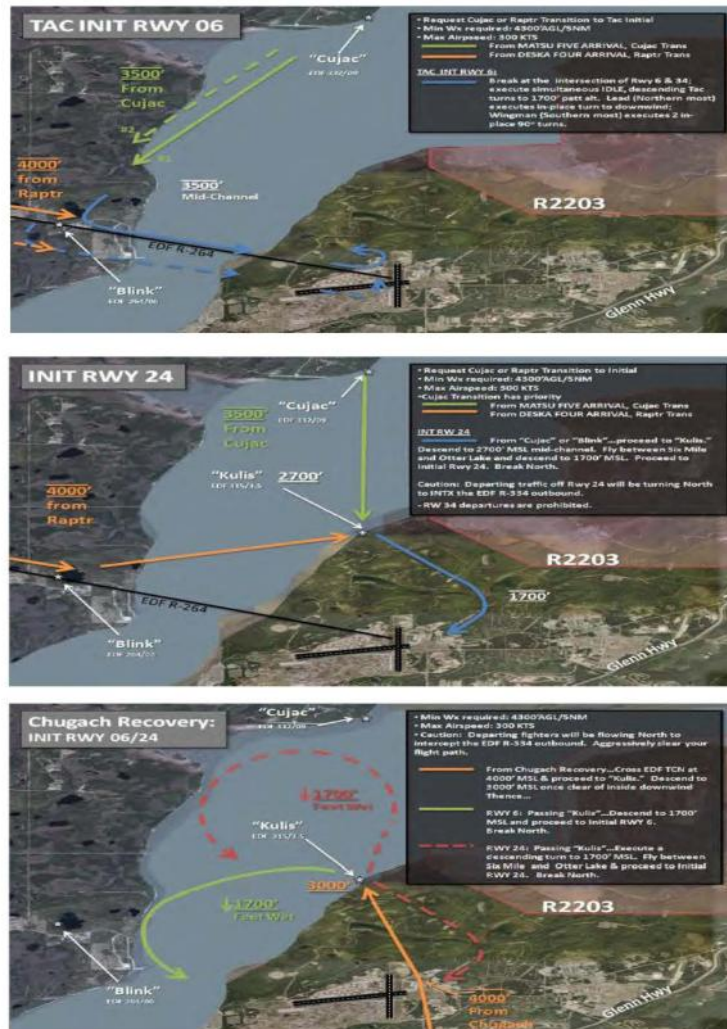
Downwind: Once passing KULIS, descend to 1200'MSL and enter a downwind for Runway 06/34/24.

Overhead: Once passing KULIS, descend to 1700'MSL and enter an initial for Runway 16/06/24.



18

Fighter Pattern Operations



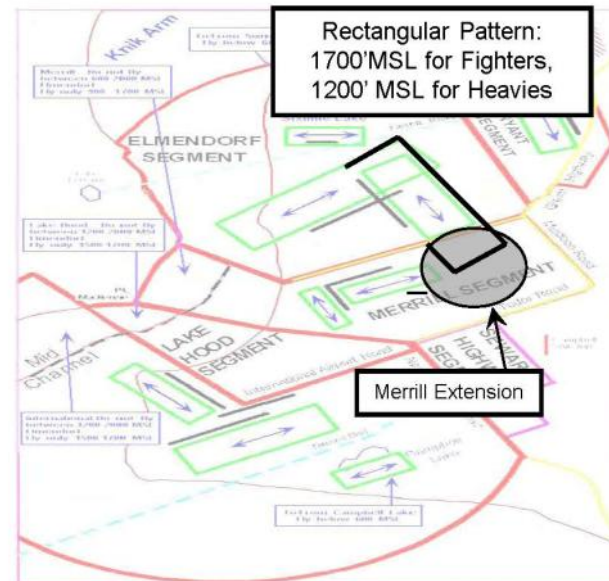
19

Runway 16 and 34 Operations

Runway 16 and 34 are generally used for training during day or night in VMC conditions.

Instrument Weather Condition (IMC): During IMC, Runway 16/34 may be used for instrument recovery using circling procedures from Runway 06, or from TACAN approach to runway 16.

Merrill Extension: If Runway 34 is needed for landing fighters, pilots will fly the base leg south of the Glenn Highway and enter into Merrill's airspace. Other Elmendorf aircraft will fly the base leg north of the Glenn Highway. There are established procedures in place for Elmendorf and Merrill towers to coordinate and communicate possible conflicts. **NOTE:** Both Elmendorf and Merrill aircraft must be especially vigilant for traffic avoidance in this area.



20

Aero Club

The **Aero Club** operates multiple light aircraft from Elmendorf on a daily basis. This facility also houses the Civil Air Patrol.

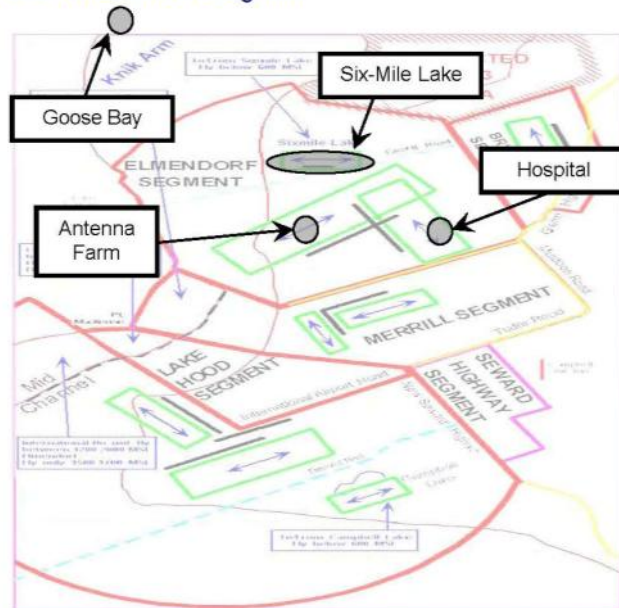
VFR Departures

Hospital Departure: Left/Right climbing turn toward the Hospital

Goose Bay Departure: Left/Right climbing turn, direct Goose Bay

Six-Mile Lake Departure: Left/Right climbing turn, direct to West end of Six-Mile Lake

Note: Unless cleared —"climbing departure," Light aircraft and helicopters will **maintain 800' MSL** until past Six-Mile Lake or clear of Elmendorf Segment



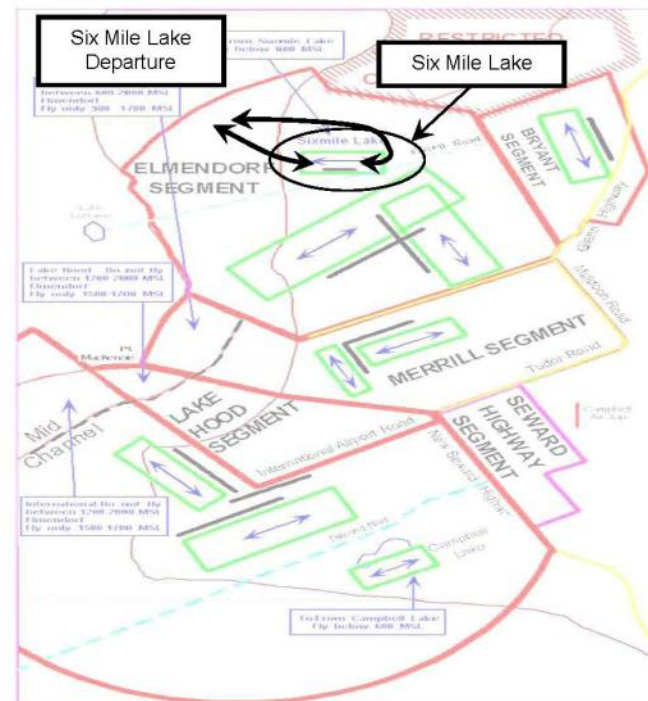
21

Six Mile Lake

Six Mile Lake is located two miles north west of Elmendorf Airfield. Light aircraft departing and arriving VFR frequent this lake during both the summer and winter months.

Six Mile Lake Departure: Left/right climbing turn, proceed to the west end of Six Mile Lake. Remain **at or below 600' MSL** until clear of the Elmendorf segment.

NOTE: Light aircraft and helicopters will **maintain 800' MSL** until passing Six Mile/Otter Lake when departing north or until clear of the Elmendorf segment when departing east.



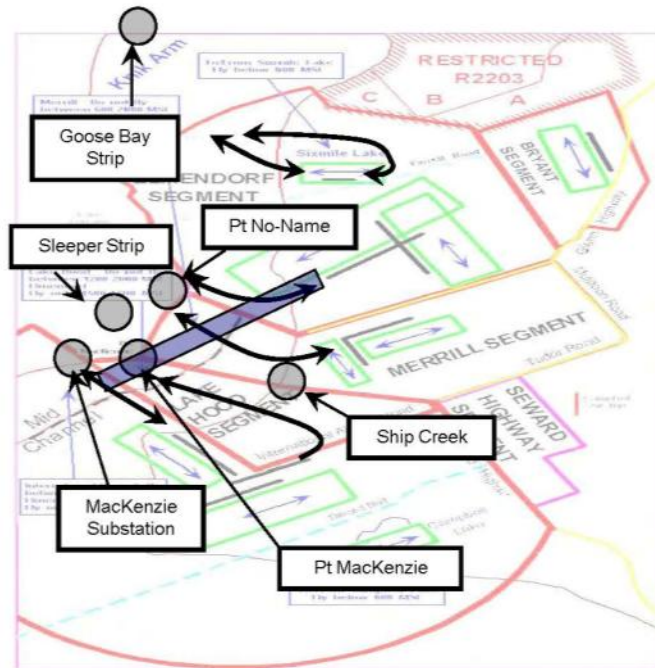
22

Anchorage Bowl VFR Traffic

Arrows depict the normal **VFR departure and arrival** routing from Merrill Field, Lake Hood, and Anchorage International.

Areas of high VFR traffic and potential conflict are circled and named.

(Note the number of departures and arrivals that cross the Elmendorf instrument arrival corridor!)



23

RED FLAG - Alaska

RED FLAG - Alaska is a series of two week, large exercises that are primarily based out of Elmendorf and Eielson. It consists of joint military flying operations by units from around the world. RED FLAG - Alaska exercises significantly increase the volume and intensity of military air traffic in the Elmendorf and Anchorage area. The earliest exercise for RED FLAG - Alaska usually begins in March and the last one usually finishes in October.

During RED FLAG - Alaska operations, as many as 30 aircraft will be departing simultaneously from Elmendorf for the Fox and Yukon Military Operating Areas (MOA) and the restricted areas near the Fox and Yukon areas. You can find what days RED FLAG - Alaska will be taking place at the web page, <http://www.jber.af.mil/11af/alaskaairspaceinfo/index.asp>. Over 10,000 SUAIS pamphlets are distributed annually. Contact your local FSS or Merrill Field management office for a free copy. Furthermore, during RED FLAG - Alaska operations, Flight Service Station or Anchorage Approach Control (118.6) can confirm the operating times for high density traffic periods and give you a good idea of their routing.

These exercises bring an enormous number of aircraft and pilots unfamiliar with the challenges of Alaska aviation. This includes pilots/aircraft from foreign militaries.



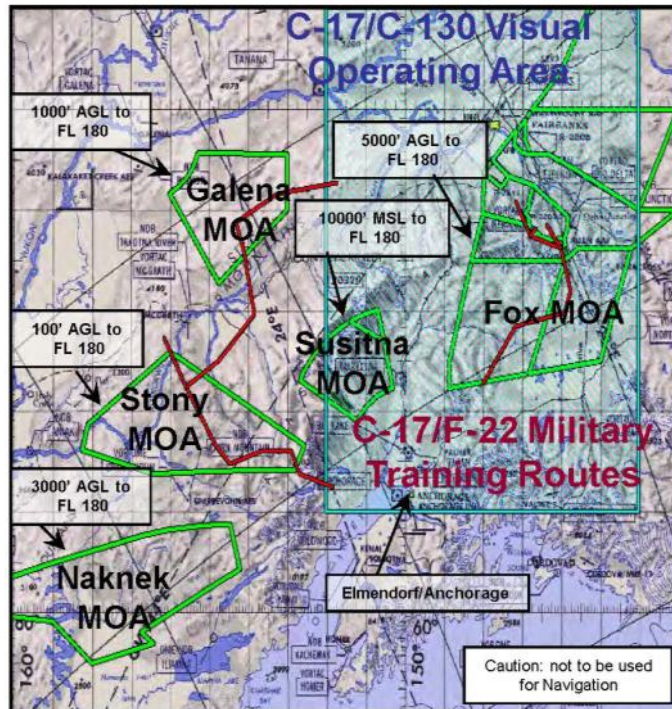
24

Training Areas and Low Level Routes

Military Operations Areas (MOA) are primarily used by fighter aircraft at all altitudes and airspeeds.

Military Training Routes (MTR) are used by C-17s and F-22s as low as 300' AGL at speeds up to 550 knots.

C-17A/C-130 Visual Operating Area is an area used by C-130s and C-17s for low level VFR training as low as 300' AGL at speeds up to 250 knots.



25

Military Operations Areas

Military Operations Areas (MOA) are used by military aircraft for air-to-air and air-to-ground training. If you are flying through an active MOA, it is a good idea to consult Anchorage Center to determine if operations are being conducted and their general location. If possible, please deconflict laterally or vertically from the other participating aircraft in the MOA. According to the Aeronautical Information Manual, "Pilot's operating under VFR should exercise extreme caution while flying within a MOA when military activity is being conducted. The activity status (active/inactive) of MOA's may change frequently. Therefore, pilots should contact FSS within 100 miles of the area to obtain accurate real-time information concerning the MOA hours of operation. Prior to entering an active MOA, pilots should contact the controlling agency for traffic advisories". When flying in and near the interior MOAs near Fairbanks and Delta Junction you can receive SUAIS service from Eielson Range Control at 125.3. Visit SUAIS website, <http://www.jber.af.mil/11af/alaskaairspaceinfo> or call 1-800-758-8723 for more information.

26

Lights-Out Operations

The FAA has approved military aircraft to operate with no external lighting in local MOAs and Air Traffic Control Assigned Areas (ATCAAs are all above 18,000' MSL). These operations are required to perform realistic training at night and on Night Vision Goggles (NVG's).

It is imperative that all users of Alaskan airspace be familiar with the areas where this training occurs. There are two types of reduced-light training:

Reduced Lighting – Aircraft anti-collision lights (strobes) off, but position lights on. This may occur in any special-use airspace (such as MOAs) without a NOTAM or in the case of the HH-60G in any airspace.

Lights-out – Anti-collision and position lights off. These operations will be announced at least 48 hours in advance via NOTAM and will be carried out with public safety in mind. For real-time information, please refer to NOTAMS, contact Anchorage Center, Eielson Range Control at 1-800-758-8723 or on 125.3, and visit the SUAIS website, <http://www.jberaf.mil/11af/alaskaairspaceinfo>.

When calling 1-800-WX-BRIEF, you must ASK the briefer for NOTAM information on each MOA you plan to transit. When checking <http://www.notams.jcs.mil/> lights-out MOA NOTAMS may be listed under Elmendorf Airfield (PAED) or Eielson AFB (PAEI), or both.

Lights-out operation will be conducted above:

5,000'+	Eielson, Birch, Stony A/B, Naknek A/B MOAs
10,000'+	Fox 1/2, Buffalo, Yukon 1/2 MOAs
15,000'+	Fox 3, Susitna MOAs

C-130 and C-17s – C-130/C-17's will be operating with reduced lighting in the Mat-Su valley at low level. They will also operate in the Elmendorf pattern with reduced lighting, by NOTAM.

27

Your Role In Collision Avoidance

- Studies of midair collisions involving aircraft by the National Transportation Safety Board (NTSB) determined that:
 - Most of the aircraft involved in collisions are engaged in recreational flying, not on any type of flight plan.
 - Most midair collisions occur in VFR weather conditions during weekend daylight hours.
 - The vast majority of accidents occurred at or near uncontrolled airports and at altitudes below 1,000 feet.
 - Pilots of all experience levels were involved in midair collisions, from pilots on first solo ride, to 20,000+ hours.
 - Flight instructors were on board the aircraft during 37 percent of the accidents in the study.
 - Most collisions occur in daylight with visibility greater than 3 miles.
- Here's how you can contribute to professional flying and reduce the odds of becoming involved in a midair collision:
 - Practice the "**see and avoid**" concept at all times regardless of whether the operation is conducted under Instrument (IFR) or Visual (VFR) Flight Rules.
 - **Always use transponder with Alt Encoding (if equipped) when VFR, even when out of radar coverage. Aircraft equipped with Traffic Collision Avoidance Systems (TCAS) can receive traffic and resolution advisories directly from the system, providing immediate instructions for separation.**
 - Under IFR control, don't always count on ATC to keep you away from other aircraft. They're human, and can make mistakes.
 - Understand the limitations of your eyes and use proper visual scanning techniques. Remember, if another aircraft appears to have no relative motion, but is increasing in size, it is likely to be on a collision course.
 - Execute appropriate clearing procedures before all climbs, descents, turns, maneuvers, or aerobatics.
 - Be aware of the type airspace in which you intend to operate in and comply with the applicable rules.

28

Your Role In Collision Avoidance (Con't)

- Adhere to the necessary communications requirements.
- Traffic advisories should be requested and used when available to assist the pilot's own visual scanning -- This in no way lessens the pilots obligation to see and avoid.
- If not practical to initiate radio contact for traffic information, at least monitor the appropriate frequency.
- Make frequent position reports along your route and at uncontrolled airports broadcast your position and intentions on common traffic advisory frequency (CTAF).
- Make your aircraft as visible as possible - turn on exterior lights below 10,000 MSL and landing lights when operating within 10 miles of any airport, in conditions of reduced visibility, where any bird activity is expected or under special VFR clearance.
- If the aircraft is equipped with a transponder, turn it on and adjust it to reply both Mode 3/A and Mode C (if installed). According to the Aeronautical Information Manual (AIM): —ransponders substantially increase the capability of radar to see all aircraft and the Mode C feature enables the controller to quickly determine where potential traffic conflicts exist. Even VFR pilots who are not in contact with ATC will be afforded greater protection from IFR aircraft receiving traffic advisories". **Not to mention the protection provided from TCAS equipped aircraft.** Furthermore, the AIM states: —In all cases, while in controlled airspace, each pilot operating an aircraft equipped with an operable ATC transponder maintained in accordance with FAR part 91.413 shall operate the transponder, including Mode C if installed, on the appropriate Mode or as assigned by ATC. In Class G airspace, the transponder should be operating while airborne unless otherwise requested by ATC".
- Above all, **AVOID COMPLACENCY.**

29

Traffic Collision Avoidance System (TCAS)

TCAS is a computerized avionics device which is designed to reduce the danger of mid-air collisions between aircraft. It monitors the airspace around an aircraft, **independent of air traffic control**, and warns pilots of the presence of other aircraft which may present a threat of midair collision.

- TCAS indication
 - **Traffic Advisory (TA):** The TA warns the pilot that another aircraft is in near vicinity, announcing "*traffic, traffic*", but does not offer any suggested remedy; it is up to the pilot to decide what to do. **Without altitude encoding, TCAS is unable to show whether you are at the same altitude or not!**
 - **Resolution Advisory (RA):** The RA provides the pilot direct vocalized instructions to avoid danger. By knowing the **altitude and location** of the conflicting traffic, they system is able to determine the safest action and advise a change in altitude by announcing, "*descend, descend*" or "*climb, climb*".
- TCAS alert depends on **YOUR** transponder setting.

<i>Conflicting Aircraft Equipment</i>	<i>TCAS Response</i>
No transponder	No TCAS indications
Transponder w/out Alt	TA Only
Transponder w/ Alt	TA/RA

- VFR traffic is strongly encouraged to operate an altitude reporting transponder in all classes of airspace.
- Bottom Line - **TCAS needs YOU to squawk altitude!**

30

Vision In Flight

Vision In Flight: The most advanced piece of flight equipment in any aircraft is the human eye, and since the number one cause of Midair Collisions is the failure to adhere to the see-and-avoid concept, efficient use of visual techniques and knowledge of the eye's limitations will help pilots avoid collisions. Your vision's clarity is influenced by some characteristics of the objects you are viewing, including:

- Your distance from the object
- The size, shape, and movement of the object
- The amount of light reflected by the object
- The object's contrast with the surrounding environment



You cannot see all objects in your field of vision with equal clarity. Visual acuity is best in a central area of about 10 to 15 degrees and decreases steadily toward the periphery of the visual field. A similar limitation of the eyes is binocular vision. For the brain to believe what is being seen, visual cues must be received from both eyes. The mind seldom believes that the object is really there if it is visible to one eye but obstructed from the other by a strut or windshield frame.

A visual limitation that few pilots are aware of is the time the eyes require to focus on an object. Focusing is an automatic reaction, but to change focus from a nearby object, such as an instrument panel, to an aircraft one mile away, may take two or more seconds.

Vision In Flight (Con't)

• PROPER CLEARING/SCANNING TECHNIQUES:

- An efficient scan pattern is paramount to visual collision avoidance procedures. In developing a proper scan technique, remember that when your head is in motion, vision is blurred and the brain will not be able to identify conflicting traffic. Therefore a constant motion scan across the windscreen is practically useless.
- A proper scan technique is to divide your field of vision into blocks approximately 10 to 15 degrees wide. Examine each block individually using a system that you find comfortable, perhaps from left to right or starting from the left and moving to the right, then back to the left again. This method enables you to detect any movement in a single block. It takes only a few seconds to focus on a single block and detect conflicting traffic.
- Remember to refocus your eyes on an object far from your aircraft (> 5 miles) after each check of your instruments... otherwise, your eyes will still be focused for close vision, making your visual lookout virtually useless.
- **A moving target attracts attention and is relatively easy to see. A stationary target or one that is not moving in your windscreen is very difficult to detect and is the one that can result in a MIDAIR COLLISION.**
- The time to perceive and recognize an aircraft, become aware of a collision potential and decide on appropriate action, may vary from as little as 2 seconds to as much as 10 seconds or more depending on the pilot, type of aircraft and geometry of the closing situation. Aircraft reaction time must also be added. By the way, any evasive maneuver contemplated should include maintaining visual contact with the other aircraft, if practical.

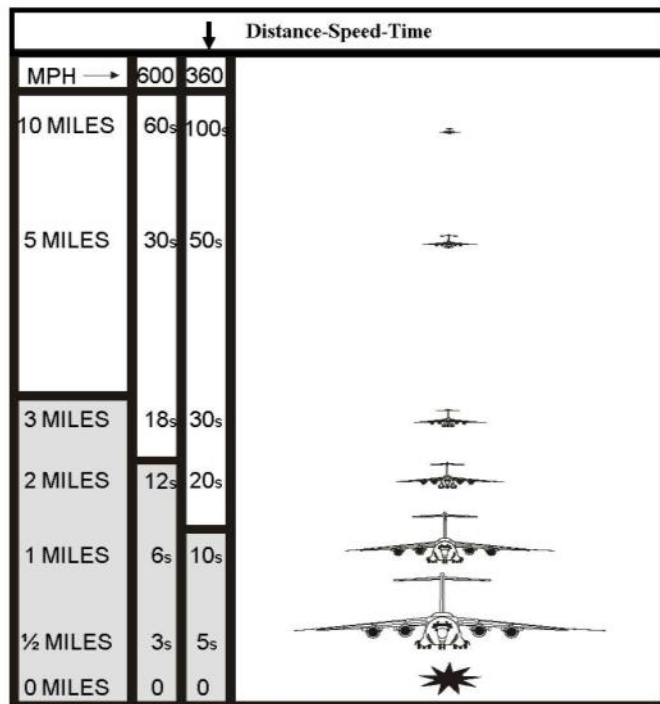
Vision In Flight (Con't)

• Will you have time to react?

12.5 seconds to
perceive an aircraft
and avoid it!

SEE OBJECT	0.1
RECOGNIZE AIRCRAFT	1.0
BECOME AWARE OF COLLISION	5.0
DECISION TO TURN LEFT OR RIGHT	4.0
MUSCULAR REACTION	0.4
AIRCRAFT LAG TIME	2.0
Total	12.5

The **360mph** column depicts a large, relatively slow moving aircraft.
(Based on combined airspeed of two aircraft)



33

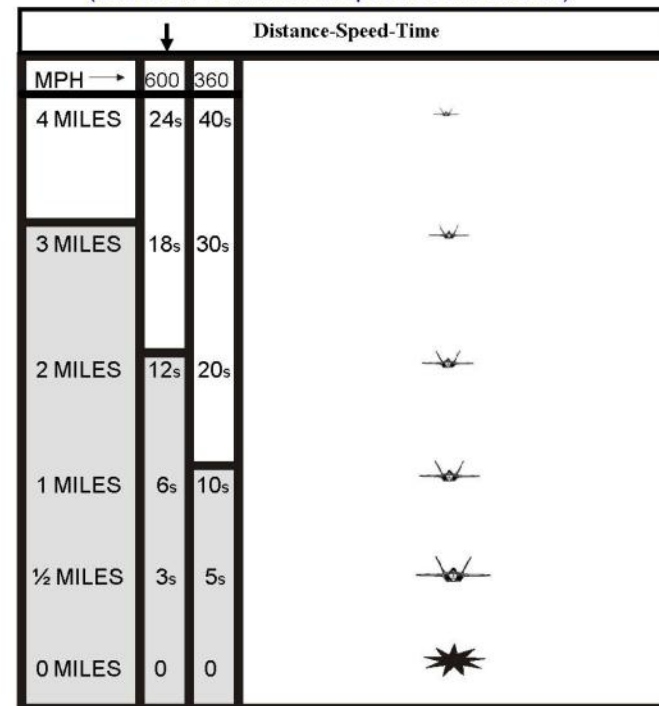
Vision In Flight (Con't)

• Will you have time to react?

Compare this chart with the last page and notice the dramatic decrease in reaction time with a high performance, fast moving fighter in a head-on course.

This chart shows an F-22 closing in from 4 miles – a midair collision quickly developing!

The **600mph** column depicts a small, fast moving aircraft.
(Based on combined airspeed of two aircraft)



34

Radar Advisory Service

As an aid to midair collision avoidance, Anchorage Approach Control provides radar advisories to VFR aircraft upon request. A transponder is required within Class C Airspace. To obtain radar advisories, state your position, altitude, and intentions, then request radar advisories. Once radar contact is established, traffic advisories will be issued for IFR and known VFR traffic (controller workload permitting).

Hazardous Air Traffic Reports (HATR)

• Who can file a HATR?

Any person assigned, attached, or under contract to the Air Force and is aware of a reportable air traffic condition.

• When should a HATR be filed?

- Near Mid-Air Collision (NMAC): Evasive action was taken to avoid a collision
- Hazardous Air Traffic Condition: Less than required separation existed between aircraft IAW applicable directives or any occurrence that did or could compromise flight safety
- Communication or NAVAID Anomalies: Any equipment indication that did or could contribute to a hazardous air traffic condition
- Hazardous Procedures: Any system, publication, or directive that did or could contribute to a hazardous air traffic condition
- Hazardous Ground Incident: Any occurrence, including vehicle operations, on the movement area that endangered an airborne aircraft or an aircraft on the ground

35

Hazardous Air Traffic Reports (Con't)

• How do I file a HATR?

- Report the details of the hazardous condition on AF Form 651 within 24 hours to the base safety office if located on an Air Force base
 - Submit the AF Form 651 to the nearest Air Force Base Safety Office after landing if the incident occurred in flight

• Near Mid-Air Collision (FAA report)

- For NMACs, inform the nearest air traffic control agency or flight service station and provide the following information:
 - Your Call Sign
 - Time and Place of incident
 - Altitude
 - Description of other aircraft involved
 - Advise them you intend to file a NMAC report and request they save all available data

• Immunity

- To encourage reporting, individuals submitting HATRs are granted immunity from disciplinary action if:
 - The violation was not deliberate
 - They committed no criminal offense
 - No mishap occurred
 - The incident was properly and promptly reported
- The investigation is required to be complete within 10 days
- After the investigation is complete, it may be released to the public (no privilege protection)

36

Aviation Safety Reporting System

• What is it?

- An aviation safety program funded by the FAA and administered by NASA that allows for hazard or incident reporting.
- The program is voluntary, confidential and non-punitive.
- The ASRS collects, analyzes, and responds to voluntarily submitted aviation safety incident reports in order to lessen the likelihood of aviation accidents.
- Civilian or military aviators, air traffic controllers, flight attendants, mechanics, ground personnel, and others involved in aviation operations submit reports to the ASRS when they are involved in, or observe, an incident or situation in which aviation safety was compromised.

• How do I report a hazard or incident?

- Go to the ASRS website @ <http://asrs.arc.nasa.gov/>
- Click on the link for the appropriate form — your browser should start the free Adobe Acrobat Reader. (If not, download the form and start Acrobat Reader manually.) You have two choices for submitting an incident report.
- Fill out the form on your computer, print the completed form, attach all pages together, enclose in an envelope, seal, affix sufficient postage, and mail to ASRS at the address below, or
- Print the uncompleted form, fill it out by hand, attach all pages together, enclose in an envelope, seal, affix sufficient postage, and mail to ASRS.
- Electronic report submission is now available.
- Mail your completed form to:
NASA AVIATION SAFETY REPORTING SYSTEM
POST OFFICE BOX 189
MOFFETT FIELD, CALIFORNIA 94035-0189

37

ASRS (Con't)

The Immunity Concept: Pilots

- The filing of a report with the National Aeronautics and Space Administration (NASA) is considered by FAA to be indicative of a constructive attitude. Such an attitude will tend to prevent future violations. Accordingly, although a finding of a violation may be made, neither a civil penalty nor certificate suspension will be imposed if:
 - The violation was inadvertent and not deliberate;
 - The violation did not involve a criminal offense, accident, or action showing lack of competence or qualification;
 - The person has not been found in any prior FAA enforcement action for a period of 5 years prior to the date of the occurrence;
 - The person proves that, within 10 days after the violation, he or she completed and delivered or mailed a written report of the incident or occurrence to NASA under ASRS.
- **NOTE:** For air traffic controllers the immunity rules are not the same. For exact regulation details, see FAA Advisory Circular Number 00-46D and Facility Operation and Administration Handbook, 7210.3R.

38

Additional Information

For additional information, check out these websites:

- Elmendorf AFB Flight Safety @
<http://www.jber.af.mil/units/3rdwingsafety/index.asp>
- Alaska Military Operations Areas/Special Use Airspace
Information Service @
<http://www.jber.af.mil/11af/alaskaairspaceinfo/index.asp>
- FAA Safety Team - FAAST @
<http://www.faasafety.gov/default.aspx>
- FAA Anchorage Terminal Area Pilot Bulletin @
http://www.faa.gov/about/office_org/headquarters_offices/ato/trac/on/anchorage/
- Aviation Safety Reporting System @ <http://asrs.arc.nasa.gov/>

Or call us at:

3 Wing Safety - (907)-552-4681 / 4798
176th Wing Safety - (907) 551-0248 / 0263

**A SUPERIOR PILOT USES SUPERIOR
JUDGMENT TO AVOID SITUATIONS
WHICH MIGHT REQUIRE THE USE OF
SUPERIOR SKILLS!**



**3 WG/SE MACA CALL (907) 552-4681 OR (907) 552-4798
176 WG/SE MACA CALL (907) 551-0248 OR (907) 551-0263**

Electronic Version Available On-line @

<http://www.jber.af.mil/units/3rdwingsafety/index.asp>

C.3 References

14 CFR 73. Special Use Airspace. Accessed through <http://www.gpo.gov/fdsys/pkg/CFR-2011-title14-vol2/pdf/CFR-2011-title14-vol2-part73.pdf>.

USDOT 2013. United States Department of Transportation. Federal Aviation Administration. Aeronautical Information Manual. Change 2 March 7, 2013.